comprised of multiple discrete light emitting components of different spatial intensity distribution and color spectrum mounted in specific orientations such that the application oriented combined lighting effect is created. The control is provided via a differentiated power supply (19) capable of affecting the current, voltage and duty cycle determining the relative contribution of each light source effecting a different spatial intensity distribution and color spectrum.

The original wording of the abstract has been added to the ending summary of the specification (appended to the beginning of paragraph [0196] with the removal of the parentheses around the figure numbers.

Paragraph [0196] is replaced by the following new paragraph.

[0196] It has been shown a method and apparatus comprising a multiple light-source illuminating device, the design and construction of which is derived from the lighting requirements of the specific application back up to electroluminescent light source. The resulting illuminating device 16 provides illumination according to the principles of correct lighting practice for the optimal performance of visual tasks in the most efficient, cost effective manner. Coupling with sensors 21 and logical control 20 allows illumination intensity and spectrum to be varied according to changing user needs. The integrated device incorporates ancillary electronic circuits for power, detection and control that best take advantage of the small size, compact beam spread, low operating voltage and long lifetime of solid state electroluminescent light sources and constitutes a complete lighting fixture design. The lighting fixture is comprised of multiple discrete light emitting components of different spatial intensity distribution and color spectrum mounted in specific orientations such that the application oriented combined lighting effect is created. The control is provided via a differentiated power supply 19 capable of affecting the current, voltage and duty cycle determining the relative contribution of each light source effecting a different spatial intensity distribution and color spectrum. Aspects of the invention include: lighting fixtures which adapt to ambient lighting, movement, visual tasks being performed, perform self-calibration feature to compensate for LED aging; lighting fixtures having spatial distribution of spectrum and intensity, providing

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both "background" room lighting, and "task" lighting, said spatial distribution of spectrum and intensity, further including positional dependence of spectrum vs. intensity and a specified design range of spectrum vs. intensity. A number of specific designs based on these capabilities are presented. The teachings of this invention are meant to illustrate the design methods, devices and construction of multiple light source luminaires. The methods and devices taught in on embodiment are not restricted thereto but may be applied to other embodiments. It is possible mix and combine the features of one embodiment with another to create a DLF with differing characteristics as taught in the method herein.

In reply to point 3: *Claims 1-4, 6, 10 and 12 are objected to because of the following informalities:*

Claims:

Cancel all claims of record and substitute new claims 20 – 40

20. [1] An illuminating device providing controlled illumination in an environment to be illuminated comprising:

a) a plurality of independent light sources, each said independent light source emanates light having an intensity, spatial light-intensity-distribution characteristic and each said independent light source emanates light having spectral wavelength characteristics,

b) a structure having predetermined form and orientation where said orientation is capable of being correlated to said environment to be illuminated and,

c) said independent light sources attached to said structure such that said spatial light intensity distribution has a directionality respective to said orientation and,

d) said directionality effects the mixing, adding and distribution of emanating light such that said controlled illumination in said environment to be

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illuminated is a product of said plurality of independent light sources,

whereby a new, more useful illuminating characteristic differing in intensity, intensity spatial distribution and spectral composition has been created in the environment to be illuminated.

21. [2] The illuminating device of claim 20 is a lighting application oriented luminaire constructed according to principles of lighting practice, providing said controlled illumination intensity, spectrum, and spatial distribution of intensity and spectrum, suited to the specific lighting application, comprising a plurality of individual light sources capable, when operating in combination, of providing the correct intensity, spectrum, and spatial distribution of intensity and spectrum for the environment to be illuminated.

22. [3] The illuminating device of claim 21 wherein the intensity, spectrum, and spatial distribution of intensity and spectrum is adjusted for changes in the environment to be illuminated in accordance with the lighting application comprising: a) a means for sensing the changes in the environment to be illuminated and b) a means for changing the light emanating characteristics of the individual light sources, thereby providing the correct intensity, spectrum, and spatial distribution of intensity and spectrum as a function of time.

23. [4] The illuminating device of claim 20, wherein the illuminating device has structure and is a luminaire providing controlled illumination comprising:

a) light sources having light intensity, spatial light intensity distribution and spectral characteristics, and

b) where said light sources are attached to the structure such that the spatial light intensity distribution of said independent light sources is having a directionality to said structure and position on said geometric support structure, and

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c) where said spatial light intensity distribution characteristic, spectral wavelength characteristic, position and directionality is individually determined by using lighting equations to calculate the required light source properties according to one or more of the lighting application requirements, and

d) where said application requirements include any items from the list comprised of: illuminance, color temperature and color rendering over the environment to be illuminated and

e) where the luminaire design criterion include any items from the list comprised of: luminous intensity, spectral wavelength distribution, the requirement of maintaining an acceptable continuum of spatial illumination and the requirement of maintaining an acceptable continuum of spatial color effects and the requirement of maintaining an acceptable glare rating for the luminaire, and

f) where the support structure has a considered geometry determined by the requirement of supporting the said independent light sources at the proper aimings and positions on the surface, and

g) where size, shape and coloring of the geometric support structure is also function of one or more considerations including containing the light sources, the ancillary equipment and aesthetic considerations.

24. [5] The illuminating device of claim 21, further comprising elements selected from the group consisting of:

a) a power supply element providing current at a voltage to the light sources and other ancillary equipment; and,

b) a differentiated power supply element capable of varying power to said independent light sources having means to effect the sending or not sending an independent electric power signal differentiated in voltage, current or frequency to each light source or group of light sources; and,

c) a controller for adjusting the power to the light sources to such that a particular amount of power supplied to the light source generates a

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corresponding intensity and provides the correct intensity, spectrum, and spatial distribution of intensity and spectrum for the application; and,

d) a storage media device capable of storing and recalling stored data relating to performance, algorithms, lighting parameters and,

e) a controller capable of receiving inputs and by means of recalling stored parameters, processing algorithms, and calculating results, generates output control signals to adjust the illumination according to correct lighting practice; and,

f) a photosensor for providing light spectrum and intensity information to the controller, said information for use in said adjusting; and,

g) a motion detector for providing occupant sensing information to the controller, said information for use in said adjusting; and,

h) a communications element coupled to the controller comprised of a receiver for receiving a data signal from an external device, and,

i) a communications element coupled to the controller comprised of a transmitter for transmitting a data signal to an external device, and,

j) a remote control man-machine interface input device capable of communicating data with the communications element; and,

k) a machine vision system comprised of an imaging device, object recognition and,

l) optical elements situated proximate to each individual light source, groupings of light source or all the light sources to control the direction of the emanating light, where the term optical refers methodologies used for redirecting light rays through any of the known phenomenon including: reflection, refraction and diffraction,

m) a mechanical assembly for the support of light sources, power supplies, controllers, sensors and other ancillary equipment and,

n) a satellite reflector receiving light from the luminaire and redirecting said light to illuminate a distant area.

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25. [6] The illuminating device of claim 24, wherein said controller is selected from the list consisting of,

a) an open-loop controller, factory programmed, for use in general lighting according to correct lighting practice: and,

b) an open-loop controller, user-programmed, by use of a programming method taking into account the lighting requirements of the environment in which the luminaire is to be used: and;

c) a closed loop controller, user-programmed, by use of a programming method taking into account the lighting requirements of the environment in which the luminaire is to be used; and,

d) a closed loop controller user-programmed, by use of a programming method taking into account the lighting requirements of the environment and self-adjusting in response to the changing lighting requirements of the environment in which the luminaire is located: and,

e) a closed loop controller, self-adjusting in response to the lighting requirements of the environment in which the luminaire is located, without pre-programming.

26. [11] A method for constructing a luminaire comprised of a plurality of independent light sources having an intensity, spatial light-intensity-distribution and spectral wavelength characteristic, providing controlled illumination in an environment to be illuminated in accordance with a lighting application comprising the steps of:

a) determining the lighting application illuminance and spectral requirements

b) determining the illumination area or field of view in the environment to be illuminated

c) determining the light source aimings and spectral composition which provide the illumination requirements.

d) constructing the luminare with the determined light sources at the aimings which provide the illumination requirements

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